

*ANIMAL HANDLERS
ERGONOMICS CLASS*

June 2003

Introduction

The purpose of this class is to:

- ★ Help you understand good ergonomics and teach you how to apply it to your job
- ★ Be aware of the risk factors for work-related musculoskeletal injuries and how to minimize them
- ★ Offer some self-help guidelines

Outline

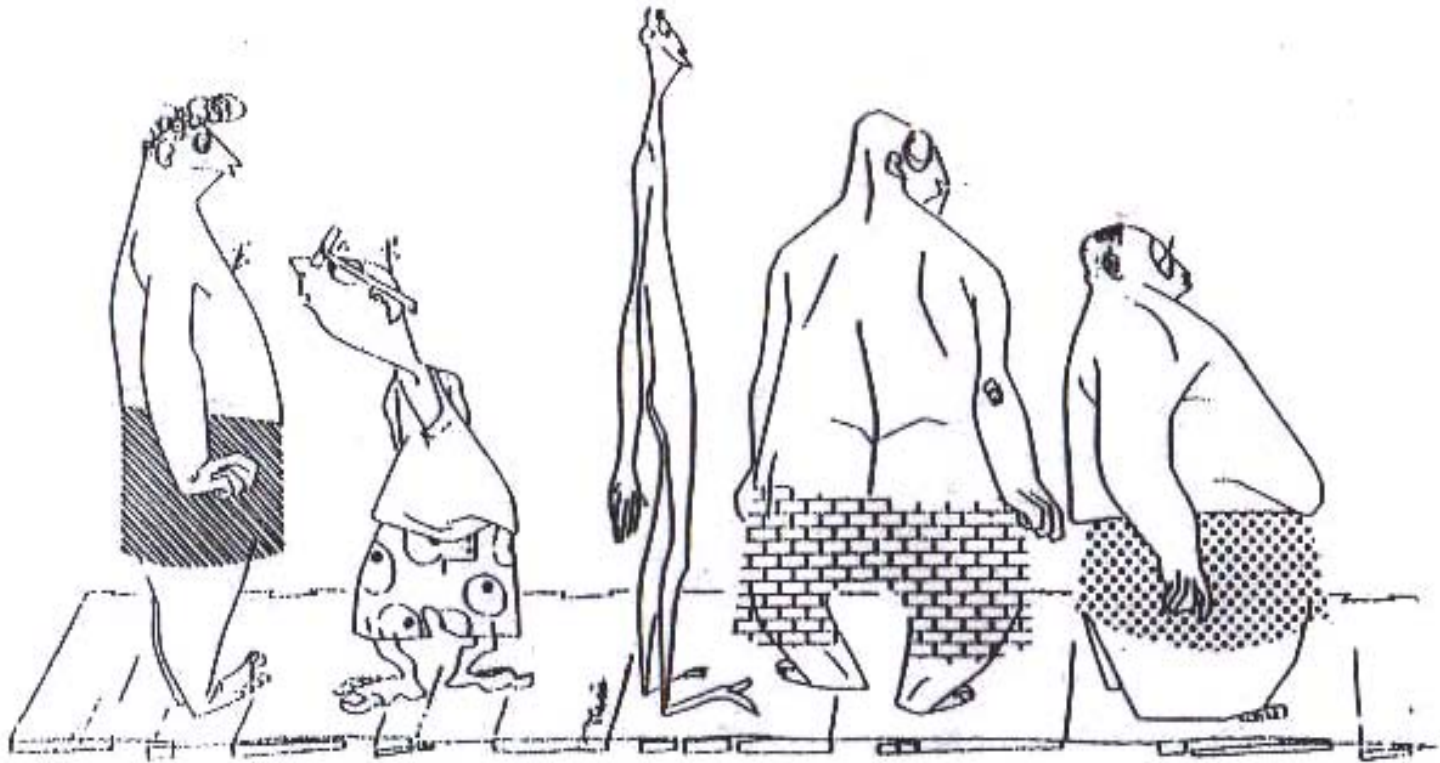
- ★ Ergonomics
- ★ Repetitive motion injury and risk factors
- ★ Basic anatomy
- ★ Posture and body mechanics
- ★ Corrective actions
- ★ Apply what we have learned to your work stations

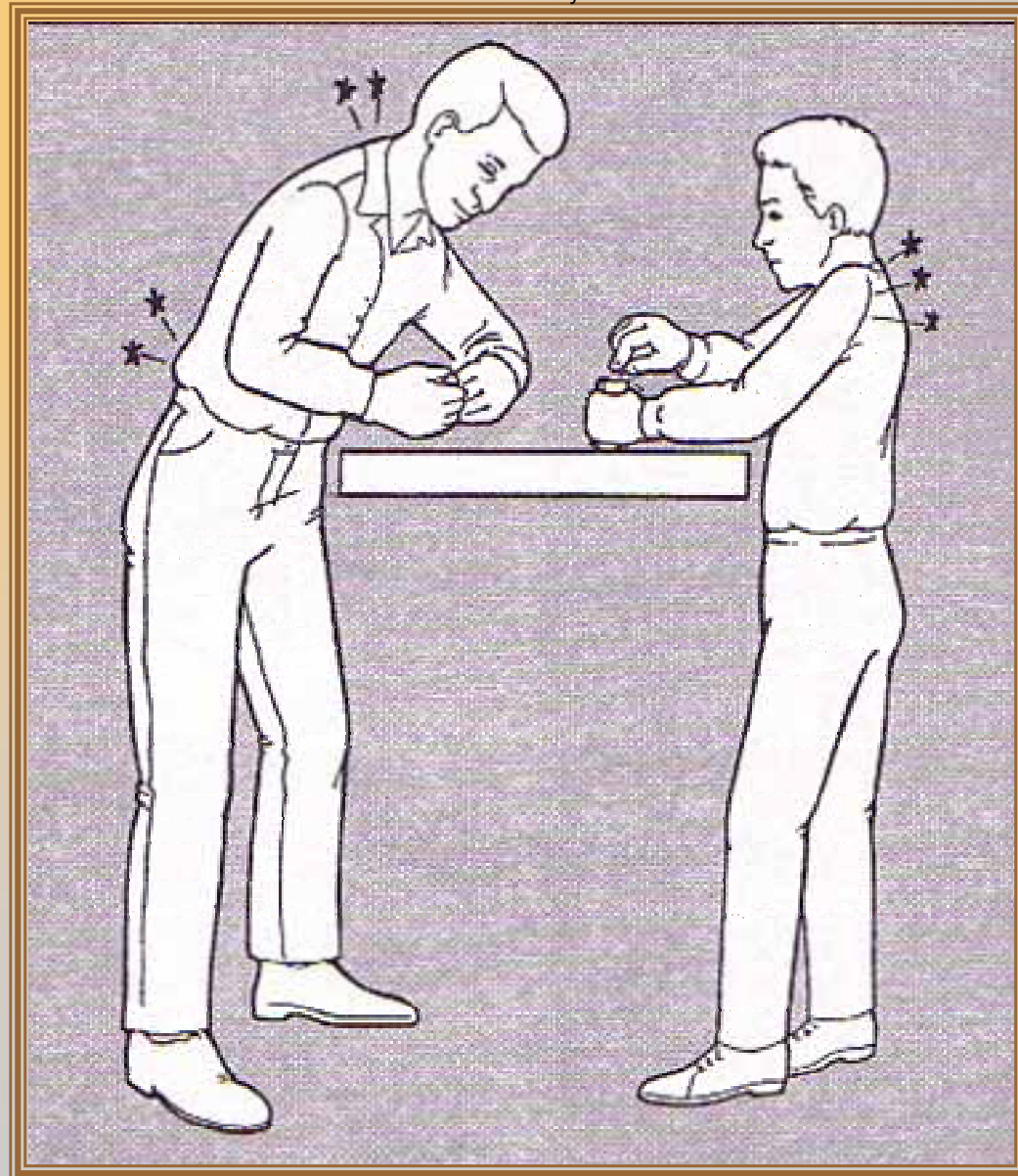
Who We Are

- ★ Medical Doctors
- ★ Physical Therapists – over 80 years combined experience
- ★ Certified Ergonomists
- ★ Safety Engineer
- ★ Certified Hand Therapist
- ★ Address numerous work-related injuries
- ★ Involved in the ergonomic pilot field program

Ergonomics

- ★ **Defined** as the scientific study of the relationship between man, work and the environment.
“Adapting the workstation to the worker”
- ★ **Goal** is to design jobs, equipment, the environment and products to within the capabilities of most people.



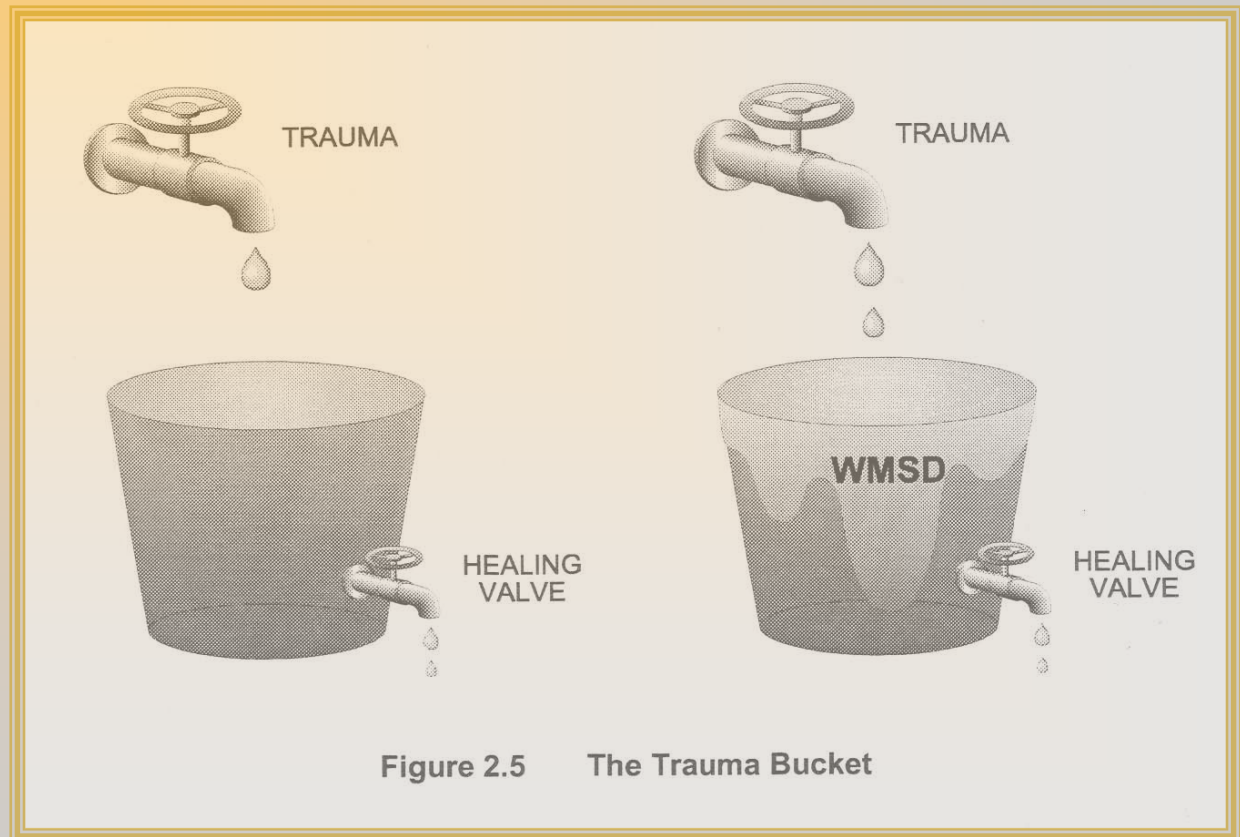


Repetitive Motion Injuries

Repetitive motion injuries or RMIs are injuries which occur over time with repeated performance of the same task.

This causes stress or microtrauma to body structures including bones, muscles, tendons, nerves, ligaments and blood vessels.

Trauma Bucket



*WMSD – work-related musculoskeletal disease

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Risk Factors

Repetition



Position/Posture



Force



Time



Repetition

- ★ Repetitive Stress
- ★ Friction
- ★ Fatigue
- ★ Loss of lubrication
- ★ Wear and Tear
- ★ Inflammation



Time/ No Breaks

- ★ Constant stress
- ★ No recovery time to repair microtrauma
- ★ BREAKS are the single most important factor to combat RMI
- ★ Break 1-2 minutes every 30'- 60' or vary tasks



Force

- ★ Constant Stress
- ★ Loss of leverage or poor biomechanics
- ★ More force is needed when the task is farther away



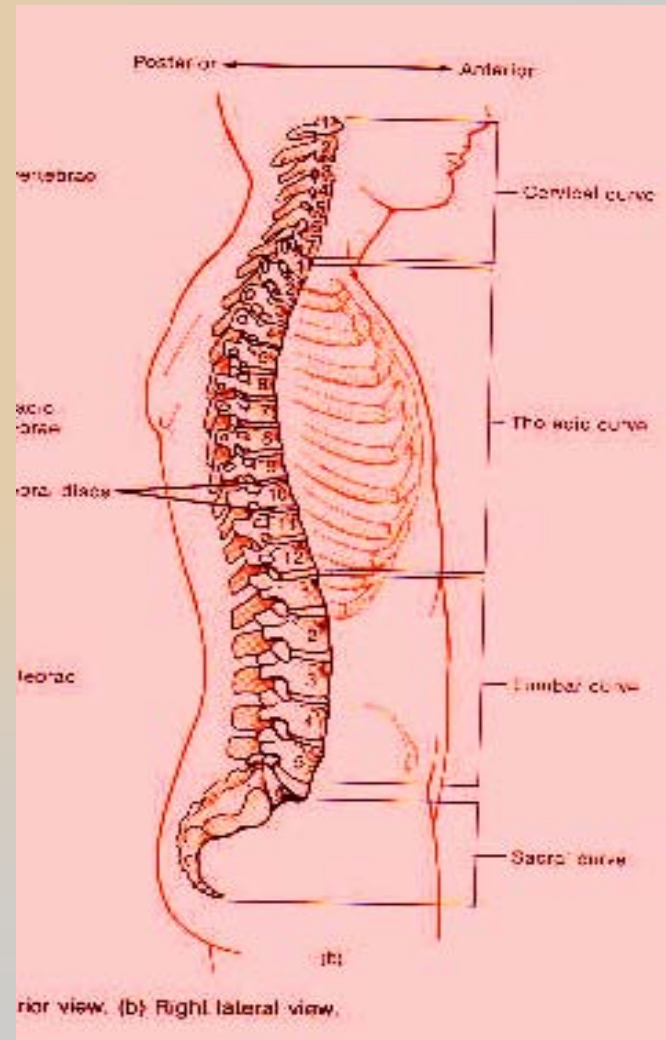
Position/Posture

- ★ Constant stress
- ★ Decreased circulation
- ★ Muscle imbalance
 - fatigue
 - over stretched
- ★ Compression
 - nerves
 - tendons
 - blood supply

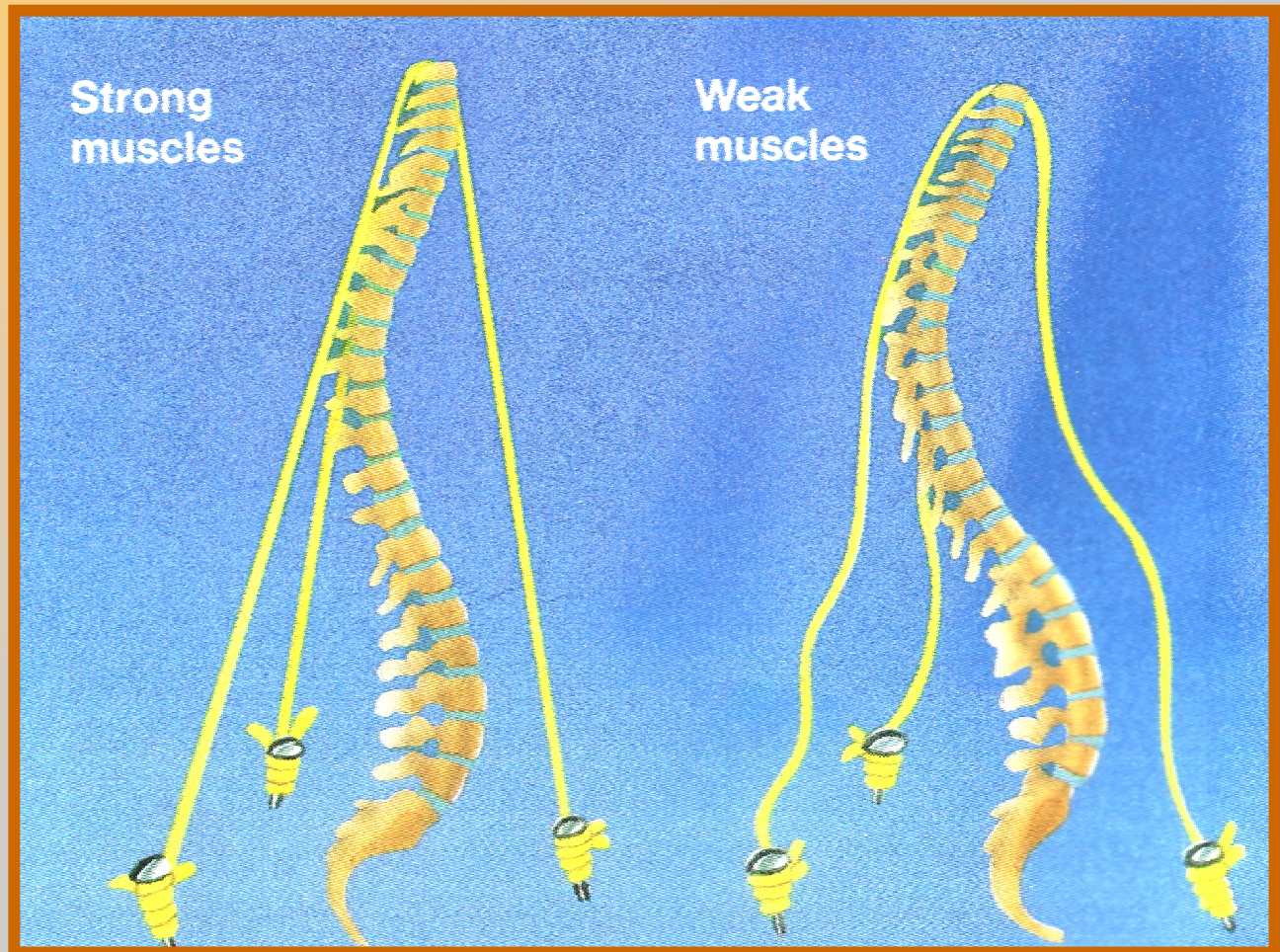


Anatomy of the Spine

- ★ Bones
- ★ Discs
- ★ Ligaments
- ★ Nerves
- ★ Muscles
- ★ Blood Vessels
- ★ S-shaped

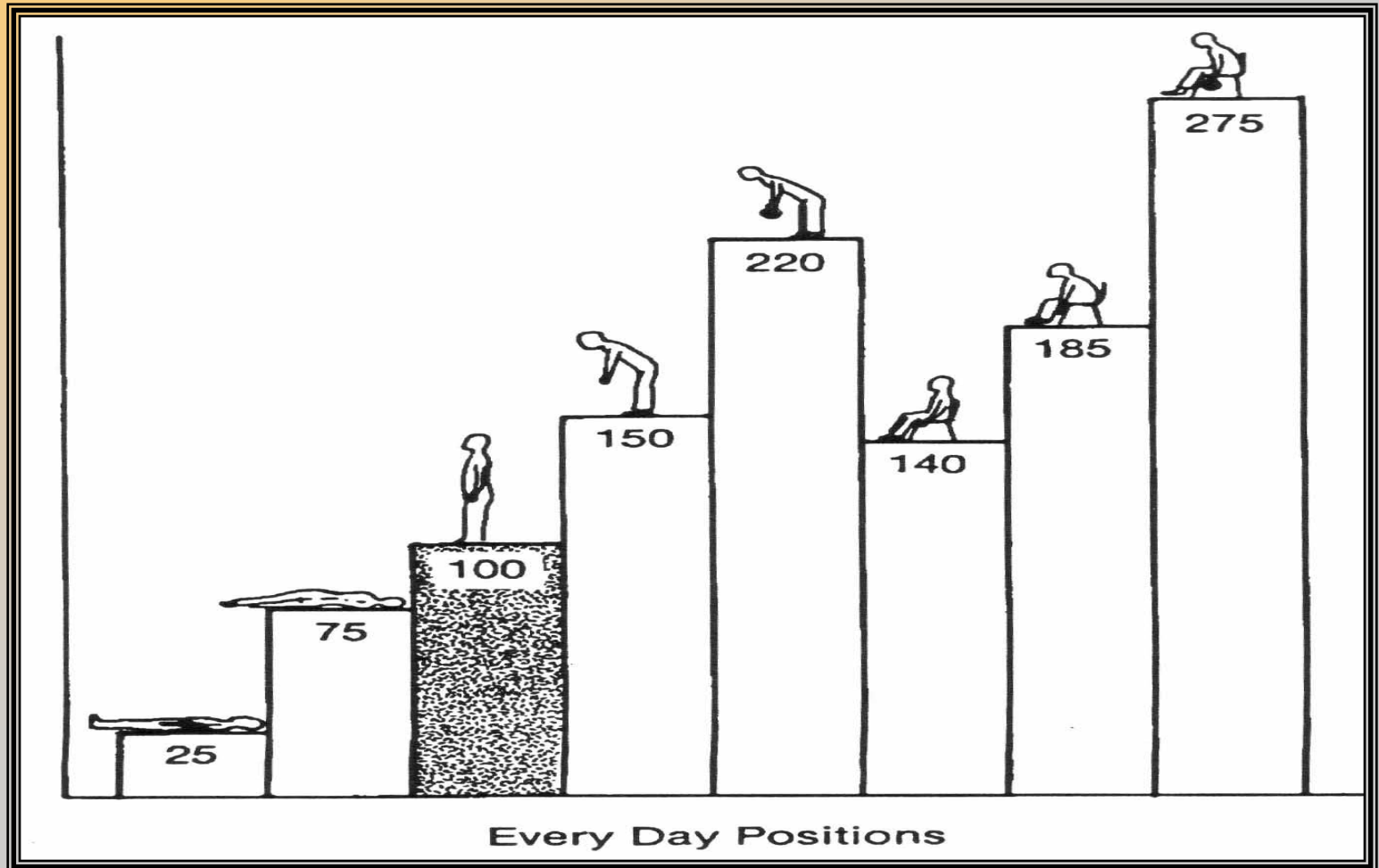


Importance of Good Muscle Support



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Disc Pressures

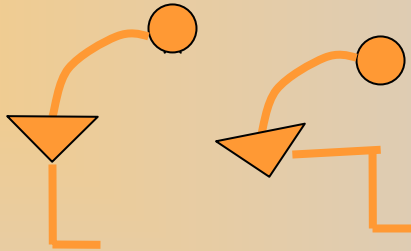


The Effects of Bending on the Spine

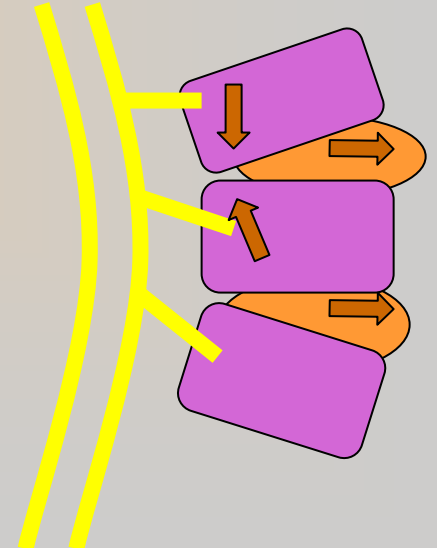
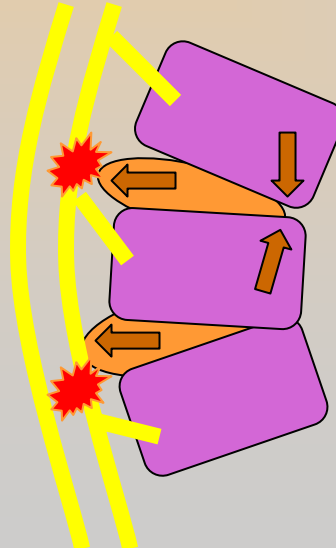
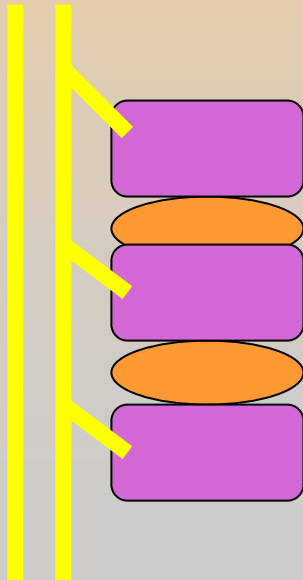
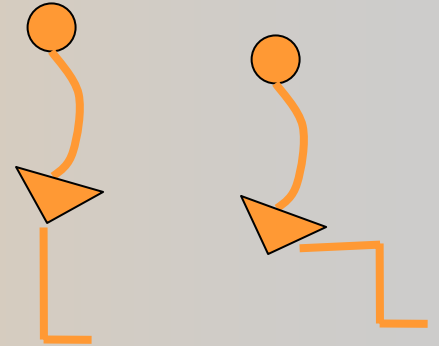
*Basic Anatomy
(Straight Spine)*



*Forward Bend
(Flexion)*



*Backward Bend
(Extension)*



How to lift properly



1. Stand with your feet shoulder-width apart, toes pointing out.



2. Bend your knees, as you lower your body, keeping the natural curves of your back. Don't bend at the waist.



3. Keep shoulders back. Tighten your abdominal muscles.



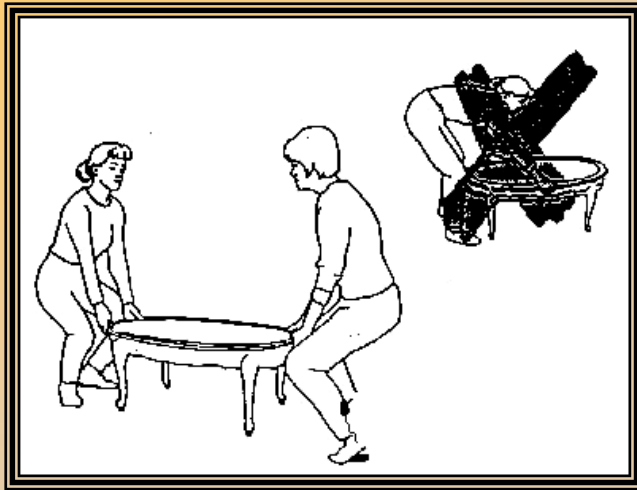
4. Tuck your buttocks under as you come back up. Lift with your legs.



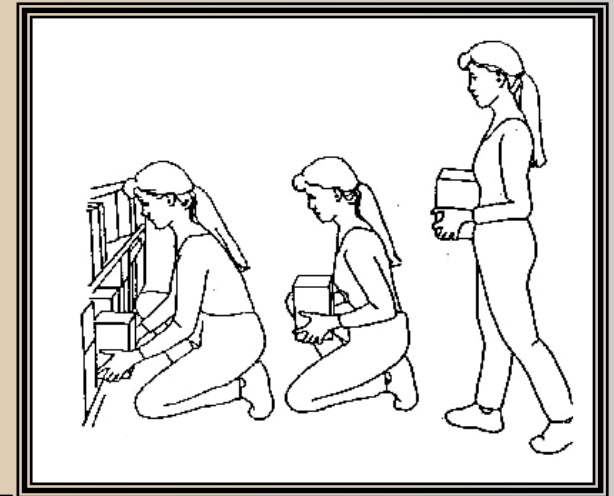
5. Keep the load close to your body.

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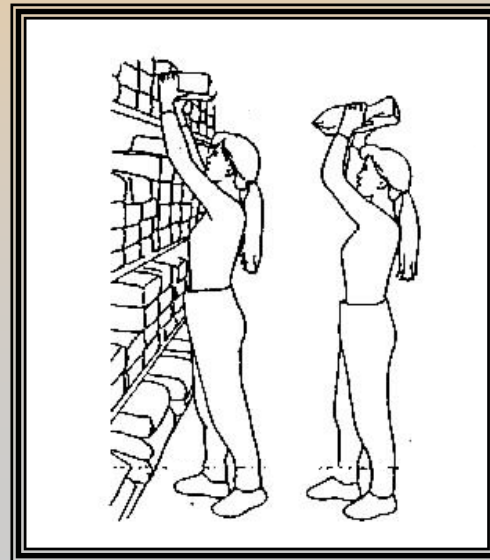
Lifting



Ask for Help

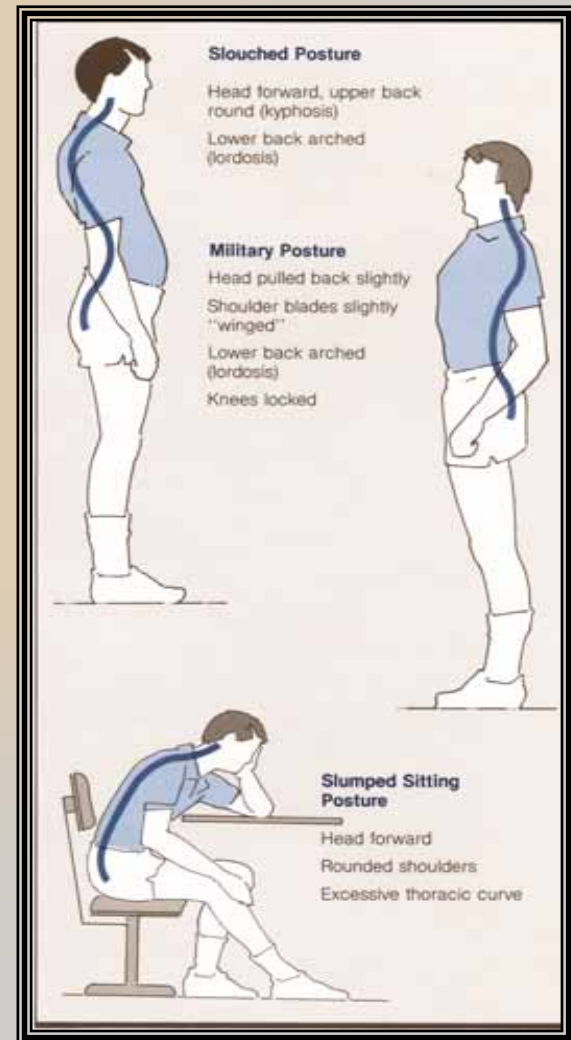
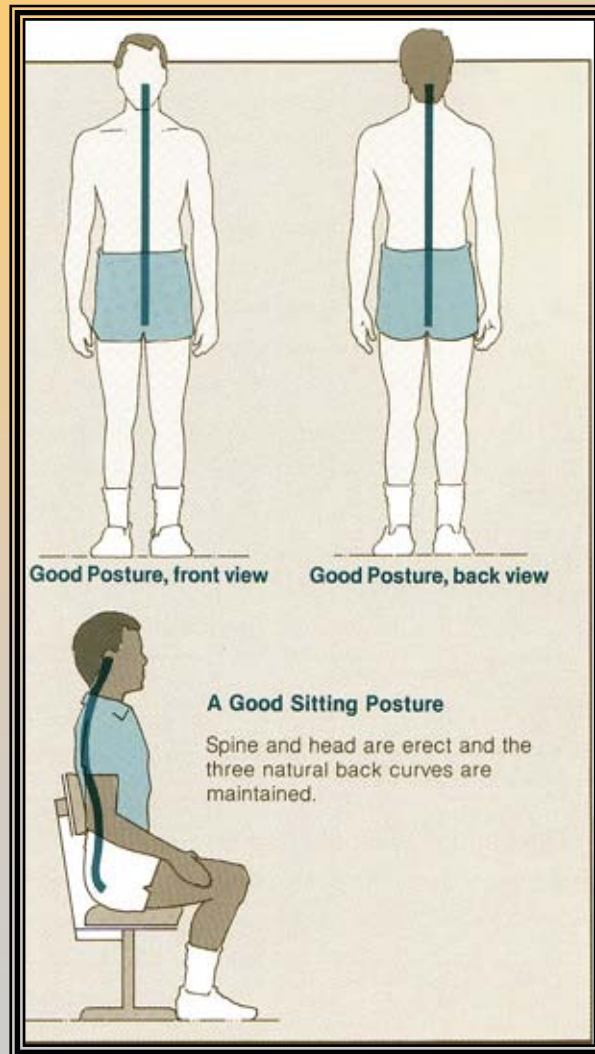


Low Shelf



Overhead

Good and Bad Postures

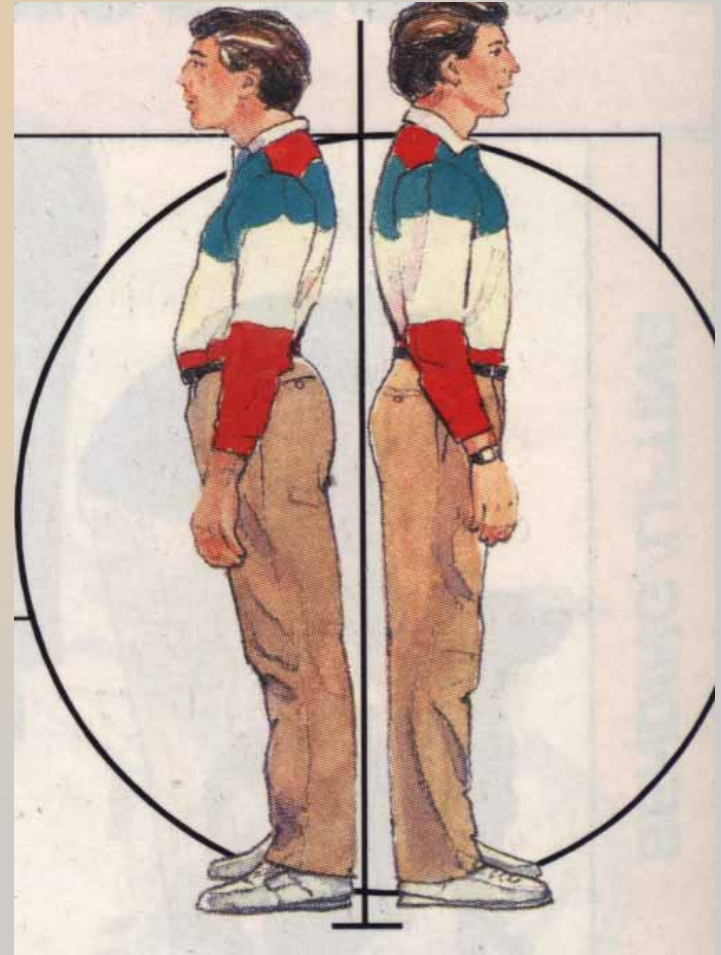


Neck Posture

- ★ Ears in line with shoulders; with comfortable chin tuck
- ★ Work positioned where eyes can view work with neck in a straight or neutral position
- ★ Avoid forward and backward neck bending
- ★ Avoid neck rotation and side bending

Basic Standing Posture

- ★ Ears in line with shoulders, hips, knees and ankles
- ★ Upright but not military stance
- ★ Maintain S-curve
- ★ Knees relaxed
- ★ Legs about shoulder width apart



Standing Tasks

- ★ Practice good posture
- ★ Adjust work heights to decrease bending or stooping.
- ★ Use platforms, stools and ladders when working overhead
- ★ Organize work station so reaching is minimized.
- ★ Rotate tasks: sitting-standing-walking
- ★ Decrease barriers for lifting.
- ★ Lift with two hands

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Standing Tasks

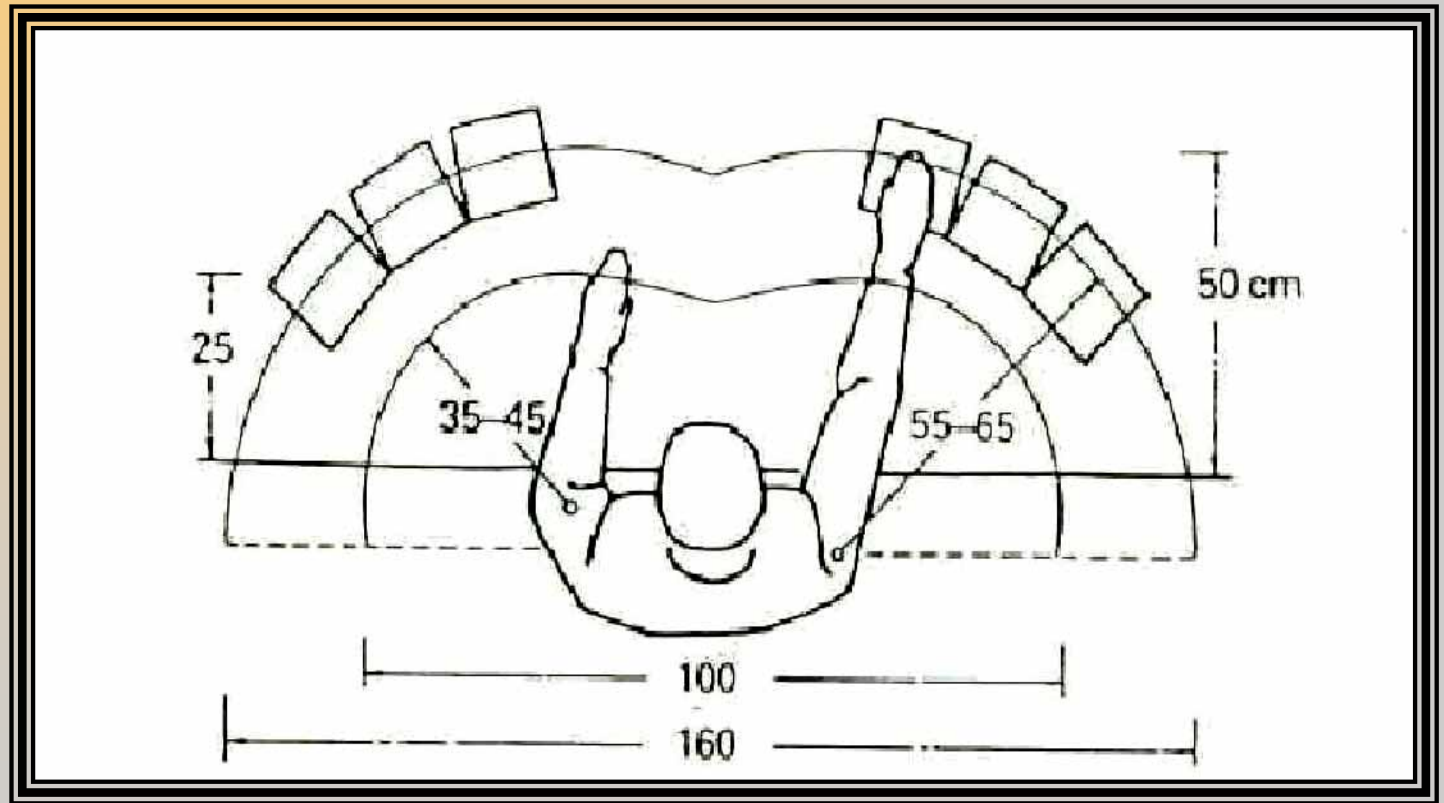


Arm and Hand Position

- ★ Shoulders relaxed
- ★ Elbows almost at right angle or 90 degrees
- ★ Reaching no more than 10” from work surface
- ★ Reaching no more than 18” with one hand or 15” with both hands
- ★ Avoid sideward reaching: place frequently used items directly in front of you

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Ideal Arm Reach



Awkward Posture

SPINE

- ★ Forward bend
- ★ Backward bend
- ★ Side bend
- ★ Rotation



Awkward Postures

UPPER EXTREMITY

- ★ Elbow elevated above midchest
- ★ Reaching behind back
- ★ Extreme elbow bend



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Excessive Reach



Awkward Posture

UPPER EXTREMITY

- ★ Extreme forearm twisting (rotation) in either direction
- ★ Extreme wrist forward bend (flexion)
- ★ Extreme wrist backward bend (extension)
- ★ Extreme wrist sideward motion (deviation)

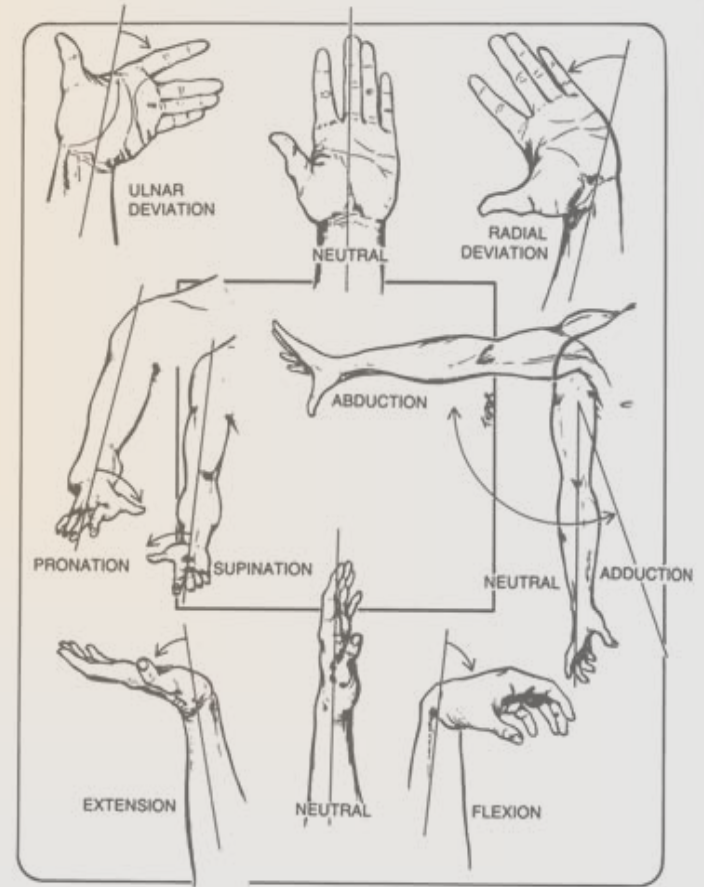


Figure A1. Positions of the hand and arm.

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Awkward Postures



Awkward Postures

UPPER EXTREMITY

- ★ Pinching or pressing with tips of the fingers
- ★ Contact stress

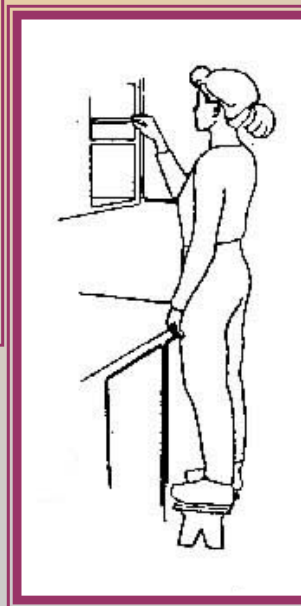


Corrective Actions

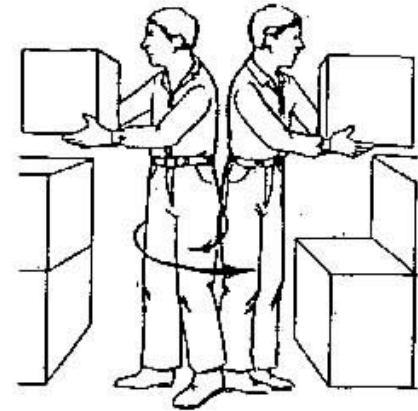
- ★ Posture
- ★ Work Behavior/Habits
- ★ Exercise and Stretch
- ★ Workplace Organization
- ★ Adaptive Tools and Equipment

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Good Body Mechanics



Pivot, Don't Twist



Pivot, Don't Twist

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Good Body Mechanics



Push versus Pull

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Good Body Mechanics



Work Habits

- ★ Be comfortable at work
- ★ Change positions frequently
- ★ Stagger tasks
- ★ Take rest breaks
- ★ Exercise at work – s-t-r-e-t-c-h!
- ★ Practice good body mechanics

Stretching Exercises

★ **Benefit**

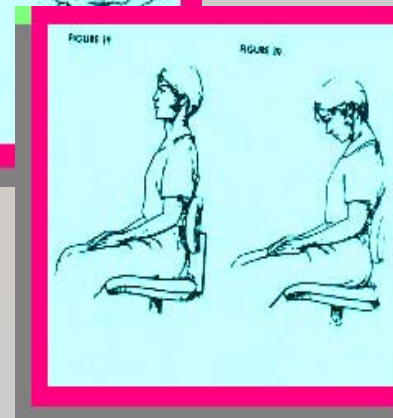
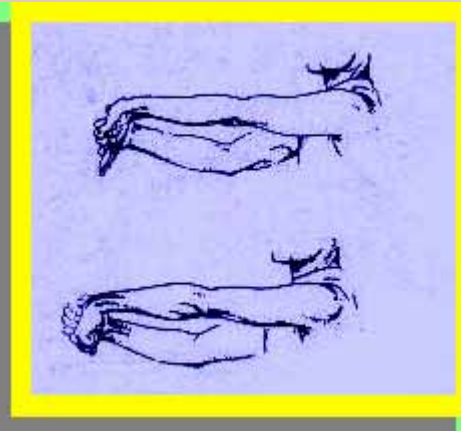
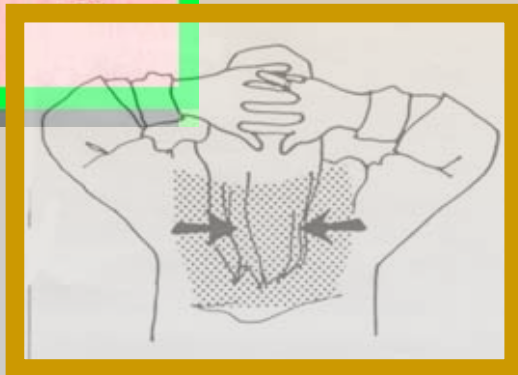
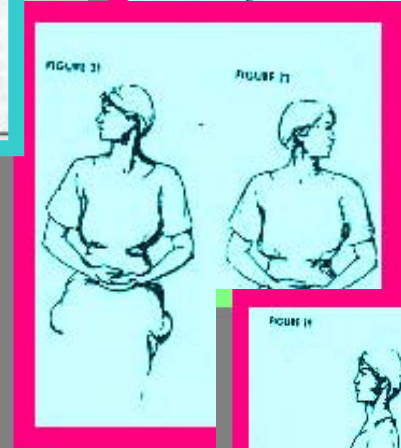
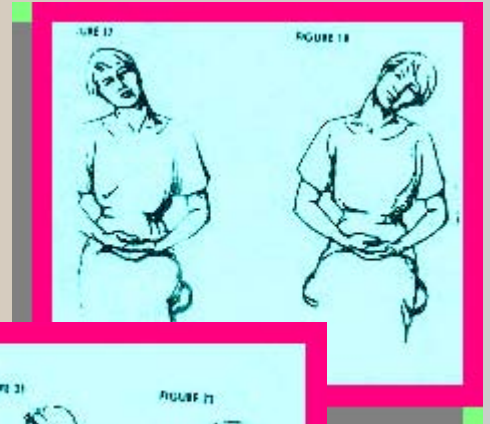
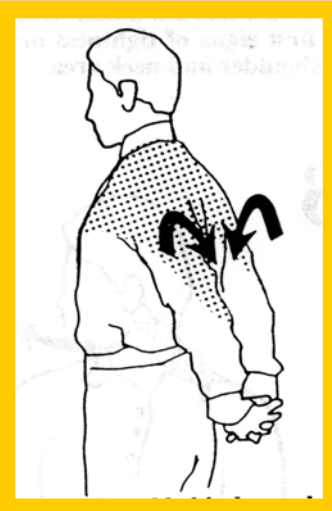
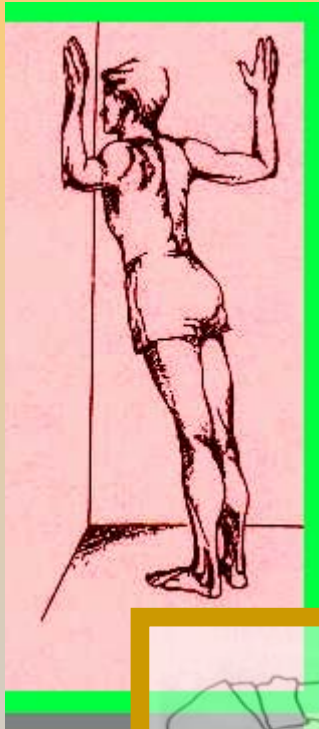
- Increases flexibility
- Reduces muscle spasm
- Increases circulation
- Decreases pain and fatigue

★ Stretching exercises should be performed often throughout day, during breaks, or intermittently with job tasks

Proper Way to Stretch

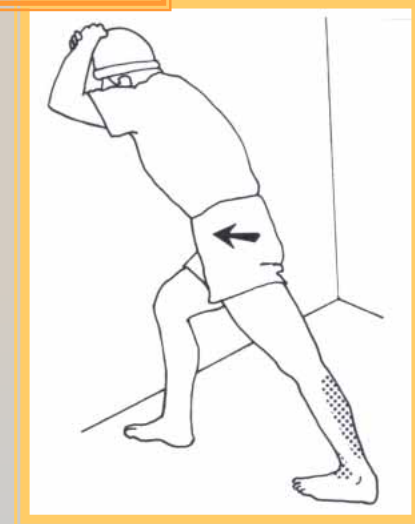
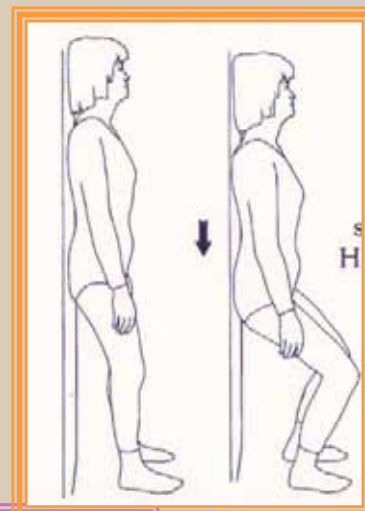
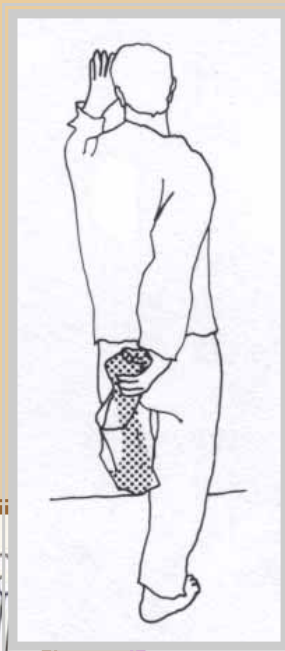
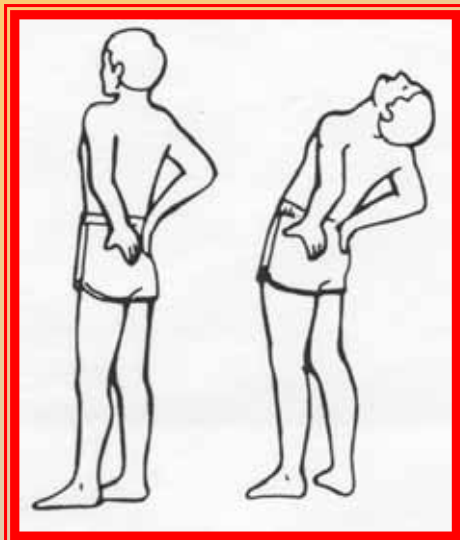
- ★ Do slowly and hold for 10 or more seconds.
- ★ Do not bounce or “pump”.
- ★ Stretch within your comfortable limit. If it hurts, don’t do it!
- ★ Do a minimum of 2 repetitions every hour.
- ★ Train muscles, don’t strain them.
- ★ If under medical care, check with your doctor first.

Upper Body Stretches



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Lower Body Stretches



PREVENTION OF REPETITIVE STRAIN

- ★ Work with good posture
- ★ Improve workplace organization. Keep everything within easy reach
- ★ Work at proper heights
- ★ Reduce excessive force
- ★ Reduce excessive repetitions
- ★ Provide clearance and access
- ★ Minimize fatigue – job rotation, position change
- ★ Identify and reduce risk factors
- ★ Early detection and intervention
- ★ Exercise

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THE END